Contents

NUMBER 84

JAMES DUNLOP: The Transport of Potassium to the Xylem Exudate of Ryegrass 1

W. J. CRAM and G. G. LATIES: The Kinetics of Bicarbonate and Malate Exchange in Carrot and Barley Root Cells 11

HAGAI GINSBURG and B. Z. GINZBURG: Radial Water and Solute Flows in Roots of *Zea mays* 28

BARBARA J. COCKBURN and A. R. WELLBURN: Changes in the Envelope Permeability of Developing Chloroplasts 36

M. TAL, D. IMBER, and I. GARDI: Abnormal Stomatal Behaviour and Hormonal Imbalance in *flacca*, a Wilty Mutant of Tomato 51

NEIL CAMPBELL, WILLIAM W. THOMSON, and KATHRYN PLATT: The Apoplastic Pathway of Transport to Salt Glands 61

ALEXANDER LANG: The Effect of Petiolar Temperature upon the Translocation Rate of ^{137}Cs in the Phloem of *Nymphoides peltata* 71

C. R. CLEMENT, M. J. HOPPER, R. J. CANAWAY, and L. H. P. JONES: A System for Measuring the Uptake of Ions by Plants from Flowing Solutions of Controlled Composition 81

T. J. FLOWERS: Salt Tolerance in *Suaeda maritima* (L.) Dum 101

W. COCKBURN: Simultaneous Measurement of Oxygen Evolution and Endogenous Adenosine I-Triphosphate Levels in Isolated 'Intact' Chloroplast Suspensions 111

J. M. WILSON and R. M. M. CRAWFORD: Leaf Fatty-Acid Content in Relation to Hardening and Chilling Injury 121

K. J. PARKINSON, H. L. PENMAN, and E. B. TREGUNNA: Growth of Plants in Different Oxygen Concentrations 132

M. G. PITMAN, U. LÜTTAGE, A. LÄUCHLI, and ERIKA BALL: Action of Abscisic Acid on Ion Transport as Affected by Root Temperature and Nutrient Status 147

P. A. THOMPSON: Germination of Celery (*Apium graveolens* L.) in Response to Fluctuating Temperatures 156

P. A. THOMPSON: Effects of Fluctuating Temperatures on Germination 164

H. P. SIKDER: Dormancy of Paddy Seeds of a 'Non-dormant' Variety 176

B. L. BERTAGNOLLI and M. J. NADAKAVUKAREN: Some Physiological Responses of *Chlorella pyrenoidosa* to 2,4-Dichlorophenoxyacetic Acid 180

JOHN G. STREETER: Growth of Two Soybean Shoots on a Single Root 189

STANLEY SHAW and MALCOLM B. WILKINS: Auxin Transport in Roots, X 199

KUO-CHUN LIU, A. J. PAPPELIS, and W. S. COURTIS: Nuclear Dry Mass and Area in Epidermal Cells of Senescing Soybean Cotyledons 208

MORTON W. MILLER, SMITA VAIDYA, and GARY E. KAUFMAN: Variable G_2 Duration in Root-Meristem Cells of *Vicia faba* 211

R. RIFFER and A. BROIDO: Asymmetric Distribution in the Biosynthesis of Cotton Cellulose-[U-^{14}C] 216

Contents

NUMBER 84

JAMES DUNLOP: The Transport of Potassium to the Xylem Exudate of Ryegrass 1

W. J. CRAM and G. G. LATIES: The Kinetics of Bicarbonate and Malate Exchange in Carrot and Barley Root Cells 11

HAGAI GINSBURG and B. Z. GINZBURG: Radial Water and Solute Flows in Roots of *Zea mays* 28

BARBARA J. COCKBURN and A. R. WELLBURN: Changes in the Envelope Permeability of Developing Chloroplasts 36

M. TAL, D. IMBER, and I. GARDI: Abnormal Stomatal Behaviour and Hormonal Imbalance in *flacca*, a Wilty Mutant of Tomato 51

NEIL CAMPBELL, WILLIAM W. THOMSON, and KATHRYN PLATT: The Apoplastic Pathway of Transport to Salt Glands 61

ALEXANDER LANG: The Effect of Petiolar Temperature upon the Translocation Rate of ^{137}Cs in the Phloem of *Nymphoides peltata* 71

C. R. CLEMENT, M. J. HOPPER, R. J. CANAWAY, and L. H. P. JONES: A System for Measuring the Uptake of Ions by Plants from Flowing Solutions of Controlled Composition 81

T. J. FLOWERS: Salt Tolerance in *Suaeda maritima* (L.) Dum 101

W. COCKBURN: Simultaneous Measurement of Oxygen Evolution and Endogenous Adenosine I-Triphosphate Levels in Isolated 'Intact' Chloroplast Suspensions 111

J. M. WILSON and R. M. M. CRAWFORD: Leaf Fatty-Acid Content in Relation to Hardening and Chilling Injury 121

K. J. PARKINSON, H. L. PENMAN, and E. B. TREGUNNA: Growth of Plants in Different Oxygen Concentrations 132

M. G. PITMAN, U. LÜTTAGE, A. LÄUCHLI, and ERIKA BALL: Action of Abscisic Acid on Ion Transport as Affected by Root Temperature and Nutrient Status 147

P. A. THOMPSON: Germination of Celery (*Apium graveolens* L.) in Response to Fluctuating Temperatures 156

P. A. THOMPSON: Effects of Fluctuating Temperatures on Germination 164

H. P. SIKDER: Dormancy of Paddy Seeds of a 'Non-dormant' Variety 176

B. L. BERTAGNOLLI and M. J. NADAKAVUKAREN: Some Physiological Responses of *Chlorella pyrenoidosa* to 2,4-Dichlorophenoxyacetic Acid 180

JOHN G. STREETER: Growth of Two Soybean Shoots on a Single Root 189

STANLEY SHAW and MALCOLM B. WILKINS: Auxin Transport in Roots, X 199

KUO-CHUN LIU, A. J. PAPPELIS, and W. S. COURTIS: Nuclear Dry Mass and Area in Epidermal Cells of Senescing Soybean Cotyledons 208

MORTON W. MILLER, SMITA VAIDYA, and GARY E. KAUFMAN: Variable G_2 Duration in Root-Meristem Cells of *Vicia faba* 211

R. RIFFER and A. BROIDO: Asymmetric Distribution in the Biosynthesis of Cotton Cellulose-[U-^{14}C] 216

NUMBER 85

J. A. RAVEN: Energetics of Active Phosphate Influx in *Hydrodictyon africanum* 221

B. A. SILVERBERG and T. SAWA: Vacuolation in *Nitella flexilis* (Characeae) 230

ALI T. AYOUB: Effect of Calcium on Sodium Salinization of Beans (*Phaseolus vulgaris* L.) 245

W. J. CRAM: Effects of Cl^- on HCO_3^- and Malate Fluxes and CO_2 Fixation in Carrot and Barley Root Cells 253

GÖTZ HARNISCHFEGER: Studies on Chloroplast Degradation *in vivo*, III 269

R. B. LEE and C. P. WHITTINGHAM: The Influence of Partial Pressure of Carbon Dioxide upon Carbon Metabolism in the Tomato Leaf 277

TREVOR A. THORPE and DONALD D. MEIER: Starch Metabolism in Shoot-forming Tobacco Callus 288

F. R. MINCHIN and J. S. PATE: Diurnal Functioning of the Legume Root Nodule 295

M. C. CLARK: Metabolism of Adenine in Healthy and Blighted Potato Leaves 309

L. NZE-EKEKANG, M. PATILLON, A. SCHÄFER, and A. KOVOOR: Repetitive DNA of Higher Plants 320

HAROLD G. WAGER: The Effect of Subjecting Peas to Air Enriched with Carbon Dioxide I 330

HAROLD G. WAGER: The Effect of Subjecting Peas to Air Enriched with Carbon Dioxide II 338

J. M. DUNWELL and N. SUNDERLAND: Pollen Ultrastructure in Anther Cultures of *Nicotiana tabacum*, I 352

J. M. DUNWELL and N. SUNDERLAND: Pollen Ultrastructure in Anther Cultures of *Nicotiana tabacum*, II 363

T. REYNOLDS: Effects of Sulphur-containing Compounds on Lettuce Fruit Germination 375

M. G. T. SHONE and ANN V. WOOD: A Comparison of the Uptake and Translocation of Some Organic Herbicides and a Systemic Fungicide by Barley, I 390

M. G. T. SHONE, B. O. BARTLETT, and ANN V. WOOD: A Comparison of the Uptake and Translocation of Some Organic Herbicides and a Systemic Fungicide by Barley, II 401

D. C. DAVENPORT, K. URIU, and R. M. HAGAN: Effects of Film Antitranspirants on Growth 410

VALERIE M. FRYDMAN and P. F. WAREING: Phase Change in *Hedera helix* L., III 420

DAVID R. REEVE and ALAN CROZIER: An Assessment of Gibberellin Structure-activity Relationships 431

J. BUTTON, J. KOCHBA, and C. H. BORNMAN: Fine Structure of and Embryoid Development from Embryogenic Ovular Callus of 'Shamouti' Orange (*Citrus sinensis* Osb.) 446

T. KANNANGARA and A. BOOTH: Diffusible Cytokinins in shoot apices of *Dahlia variabilis* 459

A. R. GOULD, M. W. BAYLISS, and H. E. STREET: Studies on the Growth in Culture of Plant Cells, XVII 468

K. K. KUNDU and L. J. AUDUS: Root Growth Inhibitors from Root Cap and Root Meristem of *Zea mays* L. 479

NUMBER 86

D. G. Bishop: The Effect of Polyene Antibiotics on Photosynthetic Electron Transfer 491

Jacqueline A. Upcroft and J. Done: Starch Gel Electrophoresis of Plant NADH-Nitrate Reductase and Nitrite Reductase 503

M. T. Esquerré-Tugayé and D. Mazau: Effect of a Fungal Disease on Extensin, the Plant Cell Wall Glycoprotein 509

A. Walker and Krystyna T. Schmidt: Effects of Concentration and Time of Exposure on the Phytotoxicity of Linuron 514

R. S. Morrod: A New Method for Measuring the Permeability of Plant Cell Membranes Using Epidermis-free Leaf Discs 521

Eliezer E. Goldschmidt and Moshe Huberman: The Coordination of Organ Growth in Developing Citrus Flowers: A Possibility for Sink-type Regulation 534

J. Grace: The Effect of Wind on Grasses 1. Cuticular and Stomatal Transpiration 542

D. W. Sheriff: A Model of Plant Hydraulics Under Non-equilibrium Conditions I. Stems 552

D. W. Sheriff: A Model of Plant Hydraulics Under Non-equilibrium Conditions II. Leaves 562

D. W. Sheriff: Transient Changes in Water Uptake into Shoots following a Change in Environment 575

D. W. Sheriff: Fluctuations in Water Uptake into and Vapour Efflux from Leaves 580

N. G. Porter and P. F. Wareing: The Role of the Oxygen Permeability of the Seed Coat in the Dormancy of Seed of *Xanthium pennsylvanicum* Wallr. 583

M. B. Jones and T. R. Milburn: An Automated CO_2 Injection Circuit for Measurements of Rates of Photosynthesis 595

NUMBER 87

E. A. Gwóźdź, J. D. Bewley, and E. B. Tucker: Studies on Protein Synthesis in *Tortula ruralis* 599

Gerald A. Rosenthal: The Interrelationship of Canavanine and Urease in Seeds of the Lotoideae 609

I. Biran, M. Robinson, and A. H. Halevy: Factors determining Petal Colour of Baccara Roses I. The Contribution of Epidermis and Mesophyll 614

I. Biran, M. Robinson, and A. H. Halevy: Factors determining Petal Colour of Baccara Roses II. The Effect of Pigment Concentration 624

I. Biran, M. Robinson, and A. H. Halevy: Factors determining Petal Colour of Baccara Roses III. The Effect of the Ratio between Cyanin and Pelargonin 632

Maria J. Grochowska: Photolytic Decarboxylation of Carboxyl-^{14}C-labelled Indol-3yl-acetic Acid in Leaves of the Apple Tree 638

David K. Shortess: Electrophoresis of Water-insoluble Chloroplast Proteins in a Phenol, Acetic Acid, Urea Solvent 647

H. C. Passam: The Oxidative Phosphorylation and ATPase Activity of *Arum* spadix Mitochondria in Relation to Heat Generation 653

TERRY A. TATTAR, ROBERT O. BLANCHARD, and GEORGE C. SAUFLEY: Relationship between Electrical Resistance and Capacitance of Wood in Progressive Stages of Discoloration and Decay 658

A. KAPLAN and J. GALE: Modification of the Pressure-bomb Technique for Measurement of Osmotic Potential in Halophytes 663

JOHN WILLIAMS: Root Density and Water Potential Gradients near the Plant Root 669

D. W. SHERIFF: Magnetohydrodynamic Sap Flux Meters: An Instrument for Laboratory Use and the Theory of Calibration 675

J. H. TROUGHTON, J. MOORBY, and B. G. CURRIE: Investigations of Carbon Transport in Plants I. The Use of Carbon-11 to Estimate Various Parameters of the Translocation Process 684

B. HACCIUS, N. N. BHANDARI, and G. HAUSNER: *In vitro* Transformation of Ovules into Rudimentary Pistils in *Nicotiana tabacum* L. 695

T. J. V. HIGGINS and B. A. BONNER: Natural Inhibitors in Normal and Dwarf Peas 705

D. A. CHARLES-EDWARDS, J. CHARLES-EDWARDS, and F. I. SANT: Leaf Photosynthetic Activity in Six Temperate Grass Varieties Grown in Contrasting Light and Temperature Environments 715

M. M. WILSON, M. E. GORDON, D. S. LETHAM, and C. W. PARKER: Regulators of Cell Division in Plant Tissues XIX. The Metabolism of 6-Benzylaminopurine in Radish Cotyledons and Seedlings 725

MIRJANA NEŠKOVIĆ and R. KONJEVIĆ: The Non-reversible Effects of Red and Far Red Light on the Content of Gibberelin-like Substances in Pea Internodes 733

A. K. KHUDAIRI and T. HEMBERG: Serine Involvement in the Flowering of *Lemna* during Photoperiodic Induction 740

L. H. AUNG and A. R. REES: Changes in Endogenous Gibberellin Levels in *Tulipa* Bulblets during Ontogeny 745

S. POIRIER-HAMON, P. S. RAO, and H. HARADA: Culture of Mesophyll Protoplasts and Stem Segments of *Antirrhinum majus* (Snapdragon): Growth and Organization of Embryoids 752

LORIN W. ROBERTS: Does 3-Methyleneoxindole Possess Auxin Activity? 761

R. E. BRIANT: An Analysis of the Effects of Gibberellic Acid on Tomato Leaf Growth 764

M. W. BAYLISS and A. R. GOULD: Studies on the Growth in Culture of Plant Cells XVIII. Nuclear Cytology of *Acer pseudoplatanus* Suspension Cultures 772

P. R. SHEWRY and P. J. PETERSON: The Uptake and Transport of Chromium by Barley Seedlings (*Hordeum vulgare* L.) 785

FREDERICK IDIEM OPUTE: Physiological Studies of the Sulpholipids of Diatoms 798

FREDERICK IDIEM OPUTE: Physiological Studies on the Phospholipids of Diatoms 810

FREDERICK IDIEM OPUTE: Lipid and Fatty-acid Composition of Diatoms 823

H. N. SINGH and KM. SUNITA: A Biochemical Study of Spore Germination in the Blue-green Alga *Anabaena doliolum* 837

NUMBER 88

R. S. S. Fraser and U. E. Loening: RNA Synthesis during Synchronous Cell Division in Cultured Explants of Jerusalem Artichoke Tuber 847

M. Patillon: Quantitative Evaluation by Reassociation Kinetics of *Agrobacterium* DNA Sequences residing in the Genome of a Crown-gall Tissue Culture 860

Margaret E. de Maria and Robert Thaine: Strands in Sieve Tubes in Longitudinal Cryostat Sections of *Cucurbita pepo* Stems 871

K. G. Moore, Ann Illsley, and P. H. Lovell: Effects of Sucrose on Petiolar Carbohydrate Accumulation and Photosynthesis in Excised *Sinapis* Cotyledons 887

P. G. Blenkinsop and J. E. Dale: The Effects of Shade Treatment and Light Intensity on Ribulose-1, 5-Diphosphate Carboxylase Activity and Fraction 1 Protein Level in the First Leaf of Barley 899

P. G. Blenkinsop and J. E. Dale: The Effects of Nitrate Supply and Grain Reserves on Fraction 1 Protein Level in the First Leaf of Barley 913

P. D. Jarman: The Diffusion of Carbon Dioxide and Water Vapour Through Stomata 927

J. Moorby, J. H. Troughton, and B. G. Currie: Investigations of Carbon Transport in Plants II 937

J. F. Garrod: The Role of Gibberellins in Early Growth and Development of Sugar Beet 945

N. L. Wade: Effects of Oxygen Concentration and Ethephon upon the Respiration and Ripening of Banana Fruits 955

J. R. Thompson: The Effect of Wind on Grasses II 965

C. M. Willmer, J. E. Pallas, and W. A. Jackson: Major Element Composition of Epidermal and Mesophyll Tissues of *Commelina communis* L. and *Vicia faba* L. Some Further Considerations of the Role of Ions in Stomatal Functioning 973

Dan Palevitch and T. H. Thomas: Thermodormancy Release of Celery Seed by Gibberellins, 6-Benzylaminopurine, and Ethephon Applied in Organic Solvent to Dry Seeds 981

J. Gale: Oxygen Control of Reproductive Growth: Possible Mediation *via* Dark Respiration 987

Alexander Lang: Tension in the Phloem 990

NUMBER 89

Chen Ginzburg: The Effect of Gibberellin A_3 and CCC on Assimilate Distribution in Gladiolus in Relation to Corm Growth 995

Vipen K. Sawhney: Morphogenesis of the Stamenless-2 Mutant in Tomato. III 1004

Swati Sen and Daphne J. Osborne: Germination of Rye Embryos Following Hydration–Dehydration Treatments 1010

S. J. Wallner and D. J. Nevins: Changes in Cell Walls Associated with Cell Separation in Suspension Cultures of Paul's Scarlet Rose 1020

G. B. Collins and N. Sunderland: Pollen-derived Haploids of *Nicotiana Knightiana*, *N. raimondii*, and *N. attenuata* 1030

D. O. Ezeala, J. W. Hart, and D. D. Sabnis: Fractionation of Monovalent Ion-stimulated Nucleoside Triphosphatase Activity in Extracts of Petiolar Tissues 1037

D. O. Ezeala, J. W. Hart, and D. D. Sabnis: Stimulation by Monovalent Cations of Adenosine Triphosphatase Activity in Extracts of Petiole Tissues 1045

N. Collis-George and M. D. Melville: Models of Oxygen Diffusion in Respiring Seed 1053

B. D. Millar: Improved Thermocouple Psychrometer for the Measurement of Plant and Soil Water Potential. III 1070

W. R. Watts: Leaf Extensions in *Zea mays*. III 1085

Adam Paszewski and Tadeus Zawadzki: Action Potentials in *Lupinus angustifolius* L. Shoots. II 1097

A. D. M. Glass: Influence of Phenolic Acids Upon Ion Uptake. III 1104

Lesley Nettleship and M. Slaytor: Adaptation of *Peganum harmala* Callus to Alkaloid Production 1114

R. A. Arnott, N. R. Brockington, and C. R. W. Spedding: A Non-destructive Method for the Measurement of Growth in Grasses in Nutrient Solutions 1124

Peter W. Barlow: Recovery of Geotropism after Removal of the Root Cap 1137

D. W. Sheriff and H. Meidner: Water Pathways in Leaves of *Hedera helix* L. and *Tradescantia virginiana* L. 1147

M. J. Chrispeels, D. Sadava, and Y. P. Cho: Enhancement of Extension Biosynthesis in Ageing Disks of Carrot Storage Tissue 1157

Index to Volume 25

ARNOTT, R. A., BROCKINGTON, N. R., and SPEDDING, C. R. W. A Non-Destructive Method for the Measurement of Growth in Grasses in Nutrient Solutions 1124

AUDUS, L. J., *see* KUNDU, K. K.

AUNG, L. H., and REES, A. R. Changes in Endogenous Gibberellin levels in *Tulipa* Bulblets during Ontogeny 745

AYOUB, ALI T. Effect of Calcium on Sodium Salinization of Beans (*Phaseolus vulgaris* L.) 245

BALL, ERIKA, *see* PITMAN, M. G.

BARLOW, PETER W. Recovery of Geotropism after Removal of the Root Cap 1137

BARTLETT, B. O., *see* SHONE, M. G. T.

BAYLISS, M. W., and GOULD, A. R. Studies on the Growth in Culture of Plant Cells XVIII. Nuclear Cytology of *Acer pseudoplatanus* Suspension Cultures 772

BAYLISS, M. W., *see* GOULD, A. R.

BERTAGNOLLI, B. L., and NADAKAVUKAREN, M. J. Some Physiological Responses of *Chlorella pyrenoidosa* to 2,4-Dichlorophenoxyacetic Acid 180

BEWLEY, E. A., *see* GWÓŹDŹ, E. A.

BHANDARI, N. N., *see* HAGIUS, B.

BIRAN, I., ROBINSON, M., and HALEVY, A. H. Factors determining Petal Colour of Baccara Roses I. The Contribution of Epidermis and Mesophyll 614

BIRAN, I., ROBINSON, M., and HALEVY, A. H. Factors determining Petal Colour of Baccara Roses II. The Effect of Pigment Concentration 624

BIRAN, I., ROBINSON, M., and HALEVY, A. H. Factors determining Petal Colour of Baccara Roses III. The Effect of the Ratio between Cyanin and Pelargonin 632

BISHOP, D. G. The Effect of Polyene Antibiotics on Photosynthetic Electron Transfer 491

BLANCHARD, ROBERT, O., *see* TATTAR, TERRY A.

BLENKINSOP, P. G., and DALE, J. E. The Effect of Nitrate Supply and Grain Reserves on Fraction 1 Protein Level in the First Leaf of Barley 913

BLENKINSOP, P. G., and DALE, J. E. The Effects of Shade Treatment and Light Intensity on Ribulose-1, 5-Diphosphate Carboxylase Activity and Fraction 1 Protein Level in the First Leaf of Barley 899

BONNER, B. A., *see* HIGGINS, T. J. V.

BOOTH, A., *see* KANNANGARA, T.

BORNMAN, C. H., *see* BUTTON, J.

BRIANT, R. E. An Analysis of the Effects of Gibberellic Acid on Tomato leaf Growth 764

BROCKINGTON, N. R., *see* ARNOTT, R. A.

BROIDO, A., *see* RIFFER, R.

BUTTON, J. KOCHBA, J., and BORNMAN, C. H. Fine Structure of and Embryoid Development from Embryogenic Ovular Callus of 'Shamonti,' Orange (*Citrus sinensis* Osb.) 446

CAMPBELL, NEIL, THOMSON, WILLIAM W., and PLATT, KATHRYN. The Apoplastic Pathway of Transport to Salt Glands 61

CANAWAY, R. J., *see* CLEMENT, C. R.

CHARLES-EDWARDS, D. A., CHARLES-EDWARDS, J., and SANT, F. I. Leaf Photosynthetic Activity in Six Temperate Grass Varieties Grown in Contrasting Light and Temperature Environments 715

CHARLES-EDWARDS, J., *see* CHARLES-EDWARDS, D. A.

CHO, Y. P., *see* CHRISPEELS, M. J.

CHRISPEELS, M. J., SADAVA, D., and CHO, Y. P. Enhancement of Extension Biosynthesis in Ageing Disks of Carrot Storage Tissue 1157

CLARK, M. C. Metabolism of Adenine in Healthy and Blighted Potato Leaves 309

CLEMENT, C. R., HOPPER, M. J., CANAWAY, R. J., and JONES, L. H. P. A System for Measuring the Uptake of Ions by Plants from Flowing Solutions of Controlled Composition 81
COCKBURN, BARBARA J., and WELLBURN, A. R. Changes in the Envelope Permeability of Developing Chloroplasts 36
COCKBURN, W. Simultaneous Measurement of Oxygen Evolution and Endogenous Adenosine 1-Triphosphate Levels in Isolated 'Intact' Chloroplast Suspensions 111
COLLINS, G. B., and SUNDERLAND, N. Pollen-derived Haploids of *Nicotiana Knightiana*, *N. raimondii*, and *N. attenvata* 1030
COLLIS-GEORGE, N., and MELVILLE, M. D. Models of Oxygen Diffusion in Respiring Seed 1053
COURTIS, W. S., *see* LIU, KUO-CHUN
CRAM, W. J. Effects of Cl^- on HCO_3^- and Malate Fluxes and CO_2 Fixation in Carrot and Barley Root Cells 253
CRAM, W. J., and LATIES, G. G. The Kinetics of Bicarbonate and Malate Exchange in Carrot and Barley Root Cells 11
CRAWFORD, R. M. M., *see* WILSON, J. M.
CROZIER, ALAN, *see* REEVE, DAVID R.
CURRIE, B. G., *see* MOORBY, J.
CURRIE, B. G., *see* TROUGHTON, J. H.
DALE, J. E., *see* BLENKINSOP, P. G.
DAVENPORT, D. C., URIU, K., and HAGAN, R. M. Effects of Film Antitranspirants on Growth 410
DE MARIA, MARGARET E., and THAINE, ROBERT. Strands in Sieve Tubes in Lontitudinal Cryostat Sections of *Cucurbita pepo* Stems 871
DONE, J., *see* UPCROFT, JACQUELINE, A.
DUNLOP, JAMES. The Transport of Potassium to the Xylem Exudate of Ryegrass 1
DUNWELL, J. M., and SUNDERLAND, N. Pollen Ultrastructure in Anther Cultures of *Nicotiana tabacum*. I 352
DUNWELL, J. M., and SUNDERLAND, N. Pollen Ultrastructure in Anther Cultures of Nicotiana tabacum, II 363
ESQUERRÉ-TUGAYÉ, M. T., and MAZAU, D. Effect of a Fungal Disease on Extensin, the Plant Cell Wall Glycoprotein 509
EZEALA, D. O., HART, J. W., and SABNIS, D. D. Fractionation of Monovalent Ion-stimulated Nucleoside Triphosphatase Activity in Extracts of Petiolar Tissues 1037
EZEALA, D. O., HART, J. W., and SABNIS, D. D. Stimulation by Monovalent Cations of Adenosine Triphosphatase Activity in Extracts of Petiole Tissues 1045
FLOWERS, T. J., Salt Tolerance in *Suaeda maritima* (L.) Dum 101
FRASER, R. S. S., and LOENING, U. E. RNA Synthesis during Synchronous Cell Division in Cultured Explants of Jerusalem Artichoke Tuber 847
FRYDMAN, VALERIE M., and WAREING, P. F. Phase Change in *Hedera helix* L., III 420
GALE, J. Oxygen Control of Reproductive Growth: Possible Mediation *via* Dark Respiration 987
GARDI, I., *see* TAL, M.
GARROD, J. F. The Role of Gibberellins in Early Growth and Development of Sugar Beet 945
GINSBURG, HAGAI, and GINZBURG, B. Z. Radial Water and Solute Flows in Roots of *Zea mays* 28
GINZBURG, B. Z., *see* GINSBURG, HAGAI
GINZBURG, CHEN. The Effect of Gibberellin A_3 and CCC on Assimilate Distribution in Gladiolus in Relation to Corn Growth 995
GLASS, A. D. M. Influence of Phenolic Acids Upon Ion Uptake. III 1104
GOLDSCHMIDT, ELIEZER E., and HUBERMAN, MOSHE. The Coordination of Organ Growth in Developing Citrus Flowers: A Possibility for Sink-type Regulation 534
GORDON, M. E., *see* WILSON, M. M.
GOULD, A. R., BAYLISS, M. W., and STREET, H. E. Studies on the Growth in Culture of Plant Cells, XVII 468
GOULD, A. R., *see* BAYLISS, M. W.

GRACE, J. The Effect of Wind on Grasses 1. Cuticular and Stomatal Transpiration 542
GROCHOWSKA, MARIA J., Photolytic Decarboxylation of Carboxyl-^{14}C-labelled Indol-3yl-acetic Acid in Leaves of the Apple Tree 638
GWÓŹDŹ, E. A., BEWLEY, J. D., and TUCKER, E. B. Studies on Protein Synthesis in *Tortula ruralis* 599
HACCIUS, B., BHANDARI, N. N., and HAUSNER, G. *In vitro* Transformation of Ovules into Rudimentary Pistils in *Nicotiana tabacum* L. 695
HAGAN, R. M., *see* DAVENPORT, D. C.
HALEVY, A. H., *see* BIRAN, I.
HARADA, H., *see* POIRIER-HAMON, S.
HARNISCHFEGER, GÖTZ. Studies on Chloroplast Degradation *in vivo*, III 269
HART, J. W., *see* EZEALA, D. O.
HAUSNER, G., *see* HACCIUS, B.
HEMBERG, T., *see* KHUDAIRI, A. K.
HIGGINS, T. J. V., and BONNER, B. A. Natural inhibitors in Normal and Dwarf Peas 705
HOPPER, M. J., *see* CLEMENT, C. R.
HUBERMAN, MOSHE, *see* GOLDSCHMIDT, ELIEZER E.
ILLSLEY, ANN, *see* MOORE, K. G.
IMBER, D., *see* TAL, M.
JACKSON, W. A., *see* WILLMER, C. M.
JARMAN, P. D. The Diffusion of Carbon Dioxide and Water Vapour Through Stomata 927
JONES, L. H. P., *see* CLEMENT, C. R.
JONES, M. B., and MILBURN, T. R. An Automated CO_2 Injection Circuit for Measurements of Rates of Photosynthesis 595
KANNANGARA, T., and BOOTH, A. Diffusible Cytokinins in Shoot Apices of *Dahlia variabilis* 459
KAPLAN, A. and GALE, J. Modification of the Pressure-bomb Technique for Measurement of Osmotic Potential in Halophytes 663
KAUFMAN, GARY E., *see* MILLER, MORTON W.
KHUDAIRI, A. K., and HEMBERG, T. Serine Involvement in the Flowering of *Lemna* during Photoperiodic Induction 740
KOCHBA, J., *see* BUTTON, J.
KONJEVIĆ, R., *see* NEŠKOVIĆ, MIRJANA
KOVOOR, A., *see* NZE-EKEKANG, L.
KUNDU, K. K., and AUDUS, L. J. Root Growth Inhibitors from Root Cap and Root Meristem of *Zea mays* L. 479
LANG, ALEXANDER. The Effect of Petiolar Temperature upon the Translocation Rate of ^{137}Cs in the Phloem of *Nymphoides peltata* 71
LANG, ALEXANDER. Tension in the Phloem 990
LATIES, G. G., *see* CRAM, W. J.
LÄUCHLI, A., *see* PITMAN, M. G.
LEE, R. B., and WHITTINGHAM, C. P. The Influence of Partial Pressure of Carbon Dioxide upon Carbon Metabolism in the Tomato Leaf 277
LETHAM, D. S., *see* WILSON, M. M.
LIU, KUO-CHUN, PAPPELIS, A. J., and COURTIS, W. S. Nuclear Dry Mass and Area Epidermal Cells of Senescing Soybean Cotyledons 208
LOENING, U. E., *see* FRASER, R. S. S.
LOVELL, P. H., *see* MOORE, K. G.
LÜTTGE, U., *see* PITMAN, M. G.
MAZAU, D., *see* ESQUERRÉ-TUGAYÉ, M. T.
MEIDNER, H., *see* SHERIFF, D. W.
MEIER, DONALD D., *see* THORPE, TREVOR A.
MELVILLE, M. D., *see* COLLIS-GEORGE, N.
MILBURN, T. R., *see* JONES, M. B.
MILLAR, B. D. Improved Thermocouple Psychrometer for the Measurement of Plant and Soil Water Potential. III 1070
MILLER, MORTON W., VAIDYA, SMITA, and KAUFMAN, GARYE. Variable G_2 Duration in Root-Meristem Cells of *Vicia faba* 211

MINCHIN, F. R. and PATE, J. S. Diurnal Functioning of the Legume Root Nodule 295
MOORBY, J., TROUGHTON, J. H., and CURRIE, B. G. Investigations of Carbon Transport in Plants. II 937
MOORBY, J., *see* TROUGHTON, J. H.
MOORE, K. G., ILLSLEY, ANN, and LOVELL, P. H. Effects of Sucrose on Petiolar Carbohydrate Accumulation and Photosynthesis in Excised *Sinapis* Cotyledons 887
MORROD, R. S. A New Method for Measuring the Permeability of Plant Cell Membranes Using Epidermis-free Leaf Discs 521
NADAKAVUKAREN, M. J., *see* BERTAGNOLLI, B. L.
NEŠKOVIĆ, MIRJANA, and KONJEVIĆ, R. The Non-reversible Effects of Red and Far Red Light on the Content of Gibberellin-like Substances in Pea Internodes 733
NETTLESHIP, LESLEY, and SLAYTOR, M. Adaptation of *Peganum harmala* Callus to Alkaloid Production 1114
NEVINS, D. J., *see* WALLNER, S. J.
NZE-EKEKANG, L., PATILLON, M., SCHÄFER, A., and KOVOOR, A. Repetitive DNA of Higher Plants 320
OPUTE, FREDERICK IDIEM, Physiological Studies of the Sulpholipids of Diatoms 798
OPUTE, FREDERICK IDIEM, Lipid and Fatty-acid Composition of Diatoms 823
OPUTE, FREDERICK IDIEM. Physiological Studies on the Phospholipids of Diatoms 810
OSBORNE, DAPHNE J., *see* SEN, SWATI
PALEVITCH, DAN, and THOMAS, T. H. Thermodormancy Release of Celery Seed by Gibberellins, 6-Benzylaminopurine, and Ethephon Applied in Organic Solvent to Dry Seeds 981
PALLAS, J. E., *see* WILLMER, C. M.
PAPPELIS, A. J., *see* LIU, KUO-CHUN.
PARKER, C. W., *see* WILSON, M. M.
PARKINSON, K. J., PENMAN, H. L., and TREGUNNA, E. B. Growth of Plants in Different Oxygen Concentrations 132
PASSAM, H. C. The Oxidative Phosphorylation and ATPase Activity of *Arum* Spadix Mitochondria in Relation to Heat Generation 653
PASZEWSKI, ADAM, and ZAWADZKI, TADEUS. Action Potentials in *Lupinus angustifolius* L. Shoots. II 1097
PATE, J. S., *see* MINCHIN, F. R.
PATILLON, M. Quantitative Evaluation by Reassociation Kinetics of *Agrobacterium* DNA Sequences residing in the Genome of a Crown-gall Tissue Culture 860
PATILLON, M., *see* NZE-EKEKANG, L.
PENMAN, H. L., *see* PARKINSON, K. J.
PETERSON, P. J., *see* SHEWRY, P. R.
PITMAN, M. G., LUTTGE, U., LÄUCHLI, A., and BALL, ERIKA. Action of Abscisic Acid on Ion Transport as Affected by Root Temperature and Nutrient Status 147
PLATT, KATHRYN, *see* CAMPBELL, NEIL
POIRIER-HAMON, S., RAO, P. S., and HARADA, H. Culture of Mesophyll Protoplasts and Stem Segments of *Antirrhinum Majus* (Snapdragon): Growth and Organization of Embryoids 752
PORTER, N. G., and WAREING, P. F. The Role of the Oxygen Permeability of the Seed Coat in the Dormancy of Seed of *Xanthium pennsylvanicum* Wallr. 583
RAO, P. S., *see* POIRIER-HAMON, S.
RAVEN, J. A. Energetics of Active Phosphate Influx in *Hydrodictyon africanum* 221
REES, A. R., *see* AUNG, L. H.
REEVE, DAVID R., *see* CROZIER, ALAN. An Assessment of Gibberellin Structure-activity Relationships 431
REYNOLDS, T. Effects of Sulphur-containing Compounds on Lettuce Fruit Germination 375
RIFFER, R., and BROIDO, A. Asymmetric Distribution in the Biosynthesis of Cotton Cellulose-[U-^{14}C] 216
ROBERTS, LORIN W. Does 3-Methyleneoxindole Possess Auxin Activity? 761
ROBINSON, M., *see* BIRAN, I
ROSENTHAL, GERALD A., The Interrelationship of Canavanine and Urease in Seeds of the Lotoideae 609

SABNIS, D. D., *see* EZEALA, D. O.
SADAVA, D., *see* CHRISPEELS, M. J.
SANT, F. I., *see* CHARLES-EDWARDS, D. A.
SAUFLEY, GEORGE C., *see* TATTAR, TERRY A.
SAWA, T., *see* SILVERBERG, B. A.
SAWHNEY, VIPEN K. Morphogenesis of the Stamenless-2 Mutant in Tomato. III 1004
SCHÄFER, A., *see* NZE-EKEKANG, L.
SCHMIDT, KRYSTYNA T., *see* WALKER A.
SEN, SWATI, and OSBORNE, DAPHNE J. Germination of Rye Embryos Following Hydration-Dehydration Treatments 1010
SHAW, STANLEY, and WILKINS, MALCOLM B. Auxin Transport in Roots. X 199
SHERIFF, D. W., Magnetohydrodynamic Sap Flux Meters: An Instrument for Laboratory Use and the Theory of Calibration 675
SHERIFF, D. W. A Model of Plant Hydraulics Under Non-equilibrium Conditions I. Stems 552
SHERIFF, D. W. A Model of Plant Hydraulics Under Non-equilibrium Conditions II. Leaves 562
SHERIFF, D. W. Transient Changes in Water Uptake into Shoots following a Change in Environment 575
SHERIFF, D. W. Fluctuations in Water Uptake into and Vapour Efflux from Leaves 580
SHERIFF, D. W., and MEIDNER, H. Water Pathways in Leaves of *Hedera helix* L. and *Tradescantia virginiana* L. 1147
SHEWRY, P. R., and PETERSON, P. J. The Uptake and Transport of Chromium by Barley Seedlings (*Hordeum volgare* L.) 785
SHONE, M. G. T., BARTLETT, B. O., and WOOD, ANN V. A Comparison of the Uptake and Translocation of Some Organic Herbicides and a Systemic Fungicide by Barley, II 401
SHONE, M. G. T., and WOOD, ANN V. A Comparison of the Uptake and Translocation of Some Organic Herbicides and a Systemic Fungicide by Barley, I 390
SHORTESS, DAVID K., Electrophoresis of Water-insoluble Chloroplast Proteins in a Phenol, Acetic Acid, Urea Solvent 647
SIKDER, H. P. Dormancy of Paddy Seeds of a 'Non-dormant' Variety 176
SILVERBERG, B. A., and SAWA, T. Vacuolation in *Nitella flexilis* (Characeae) 230
SINGH, H. N., and SUNITA, KM. A Biochemical Study of Spore Germination in the Blue-green Alga *Anabaena doliolum* 837
SLAYTOR, M., *see* NETTLESHIP, LESLEY
SPEDDING, C. R. W., *see* ARNOTT, R. A.
STREET, H. E., *see* BAYLISS, M. W.
STREETER, JOHN G. Growth of Two Soybean Shoots on a Single Root 189
SUNDERLAND, N., *see* COLLINS, G. B.
SUNDERLAND, N., *see* DUNWELL, J. M.
SUNITA, KM., *see* SINGH, H. N.
TAL, M., IMBER, D., and GARDI, I. Abnormal Stomatal Behaviour and Hormonal Imbalance in *Flacca*, a Wilty Mutant of Tomato 51
TATTAR, TERRY A., BLANCHARD, ROBERT O., and SAUFLEY, GEORGE C. Relationship between Electrical Resistance and Capacitance of Wood in Progressive Stages of Discoloration and Decay 658
THAINE, ROBERT, *see* DE MARIA, MARGARET E.
THOMPSON, J. R. The Effect of Wind on Grasses. II 965
THOMPSON, P. A. Effects of Fluctuating Temperatures on Germination 164
THOMPSON, P. A. Germination of Celery (*Apium graveolens* L.) in Response to Fluctuating Temperatures 156
THOMSON, WILLIAM W., *see* CAMPBELL, NEIL
THORPE, TREVOR A., and MEIER, DONALD D. Starch Metabolism in Shoot-forming Tobacco Callus 288
TREGUNNA, E. B., *see* PARKINSON, K. D.
TROUGHTON, J. H., MOORBY, J., and CURRIE, B. G. Investigations of Carbon Transport in Plants I. The Use of Carbon-11 to estimate various parameters of the translocation process 684

TROUGHTON, J. H., *see* MOORBY, J.
TUCKER, E. B., *see* GWÓŹDŹ, E. A.
UPCROFT, JACQUELINE, A., and DONE, J. Starch Gel Electrophoresis of Plant NADH-Nitrate Reductase and Nitrite Reductase 503
URIU, K., *see* DAVENPORT, D. C.
VAIDYA, SMITA, *see* MILLER, MORTON W.
WADE, N. L. Effects of Oxygen Concentration and Ethephon upon the Respiration and Ripening of Banana Fruits 955
WAGER, HAROLD, G. The Effect of Subjecting Peas to Air Enriched with Carbon Dioxide. I 330
WAGER, HAROLD, G. The Effect of Subjecting Peas to Air Enriched with Carbon Dioxide. II 338
WALKER, A., and SCHMIDT, KRYSTYNA T. Effects of Concentration and Time of Exposure on the Phytotoxicity of Linuron 514
WALLNER, S. J., and NEVINS, D. J. Changes in Cell Walls Associated with Cell Separation in Suspension Cultures of Paul's Scarlet Rose 1020
WAREING, P. F., *see* FRYDMAN, VALERIE M.
WAREING, P. F., *see* PORTER, N. G.
WATTS, W. R. Leaf Extensions in *Zea mays*. III 1085
WELLBURN, A. R., *see* COCKBURN, BARBARA J.
WHITTINGHAM, C. P., *see* LEE, R. B.
WILKINS, MALCOLM B., *see* SHAW, STANLEY
WILLIAMS, JOHN. Root Density and Water Potential Gradients near the Plant Root 669
WILLMER, C. M., PALLAS, J. E., and JACKSON, W. A. Major Element Composition of Epidermal and Mesophyll Tissues of *Commelina Communis* L. and *Vicia Faba*, L. Some Further Considerations of the Role of Ions in Stomatal Functioning 973
WILSON, J. M., and CRAWFORD, R. M. M. Leaf Fatty-Acid Content in Relation to Hardening and Chilling Injury 121
WILSON, M. M., GORDON, M. E., LETHAM, D. S., and PARKER, C. W. Regulators of Cell Division in Plant Tissues XIX. The Metabolism of 6-Benzylaminopurine in Radish Cotyledons and Seedlings 725
WOOD, ANN V., *see* SHONE, M. G. T.
ZAWADZKI, TADEUS, *see* PASZEWSKI, ADAM